Identification of microorganisms from the soil for cellobiosan utilization

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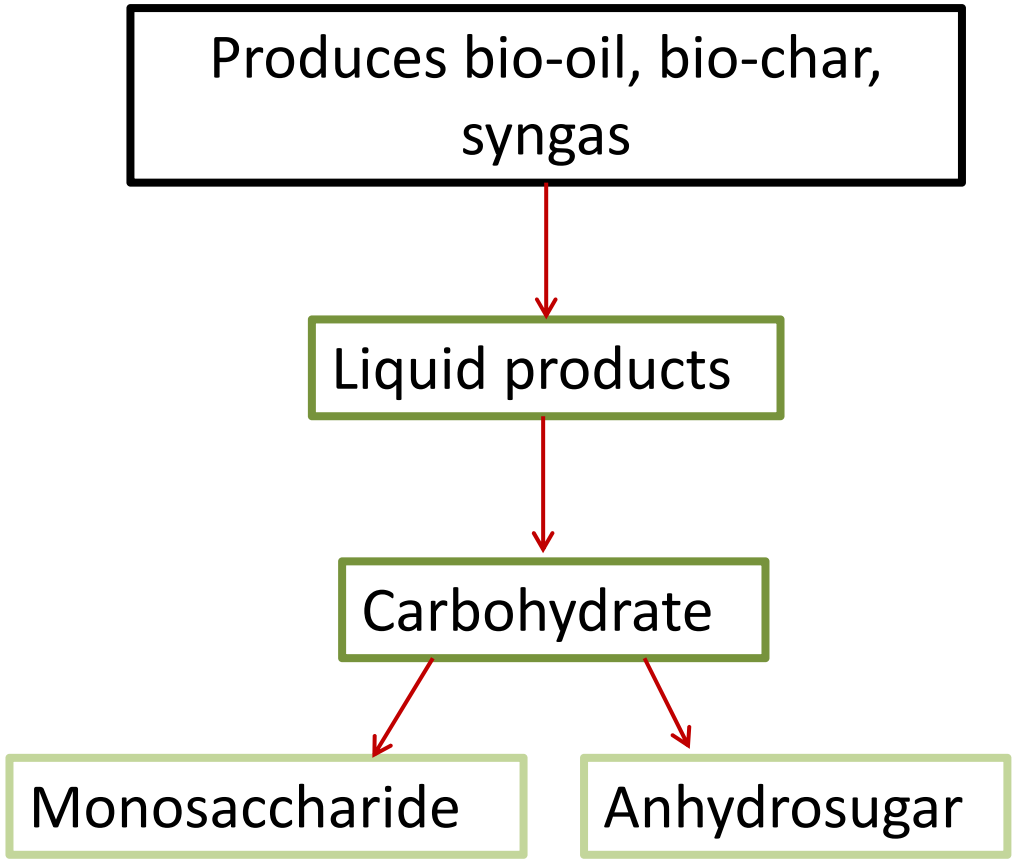
Fast Pyrolysis

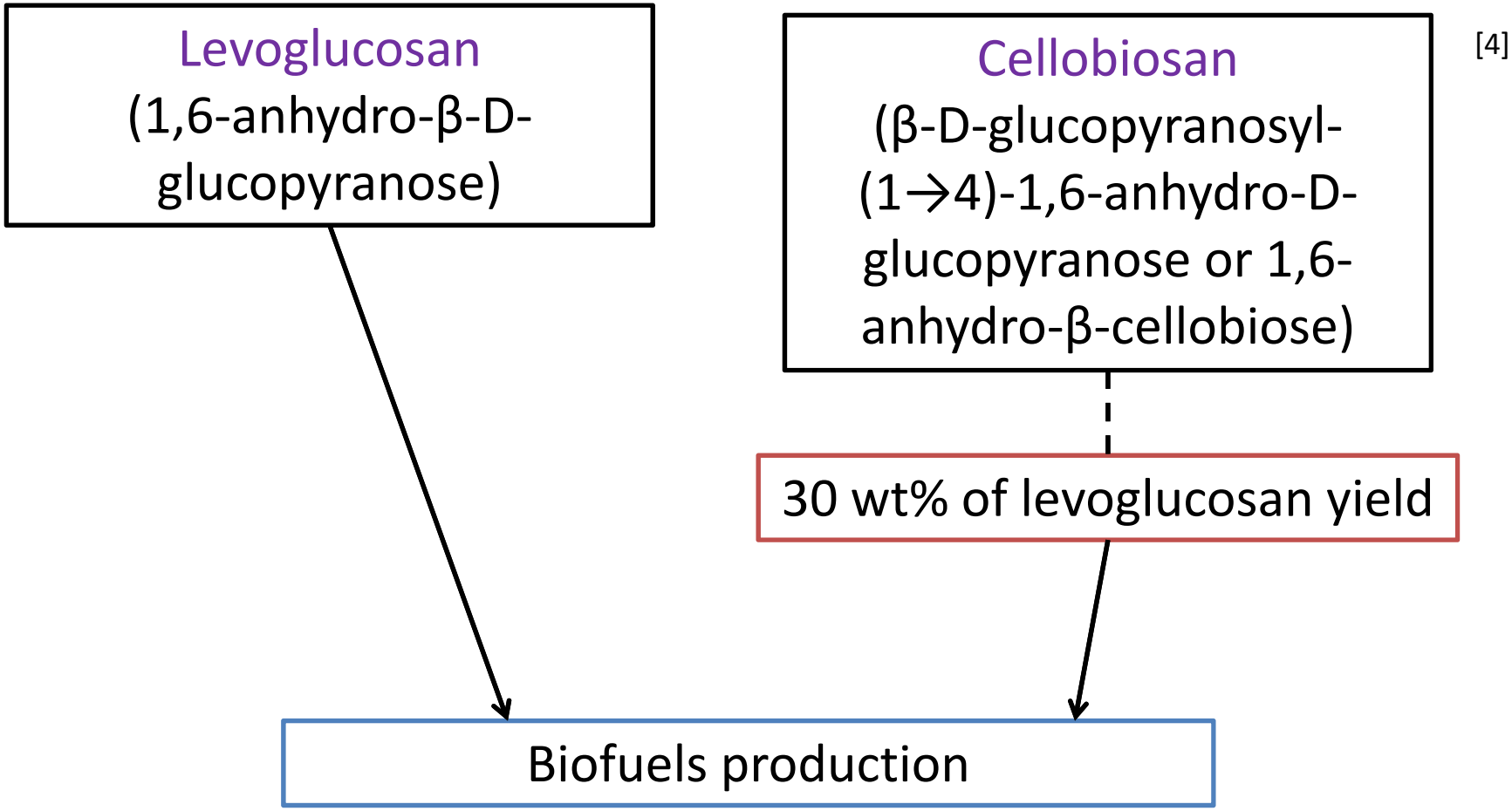
[1, 2] Recovers sugar from lignocellulosic material

[3, 6] Maximum yield obtained around 500°C

Overcomes the challenge of acid hydrolysis



Anhydrosugars



[4]

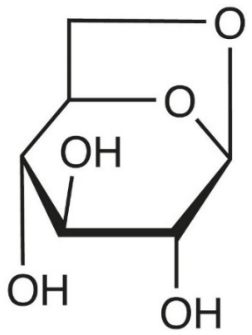
Utilization of anhydrosugars

Levoglucosan

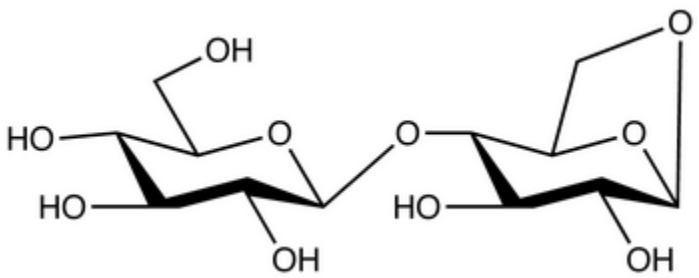
- As tracer compound to determine smoke distribution
- Fermented to produce lipids, ethanol, and citric acid
- Synthesis of macrolide antibiotics [5, 7, 8]

Cellobiosan

- Biological utilization not known

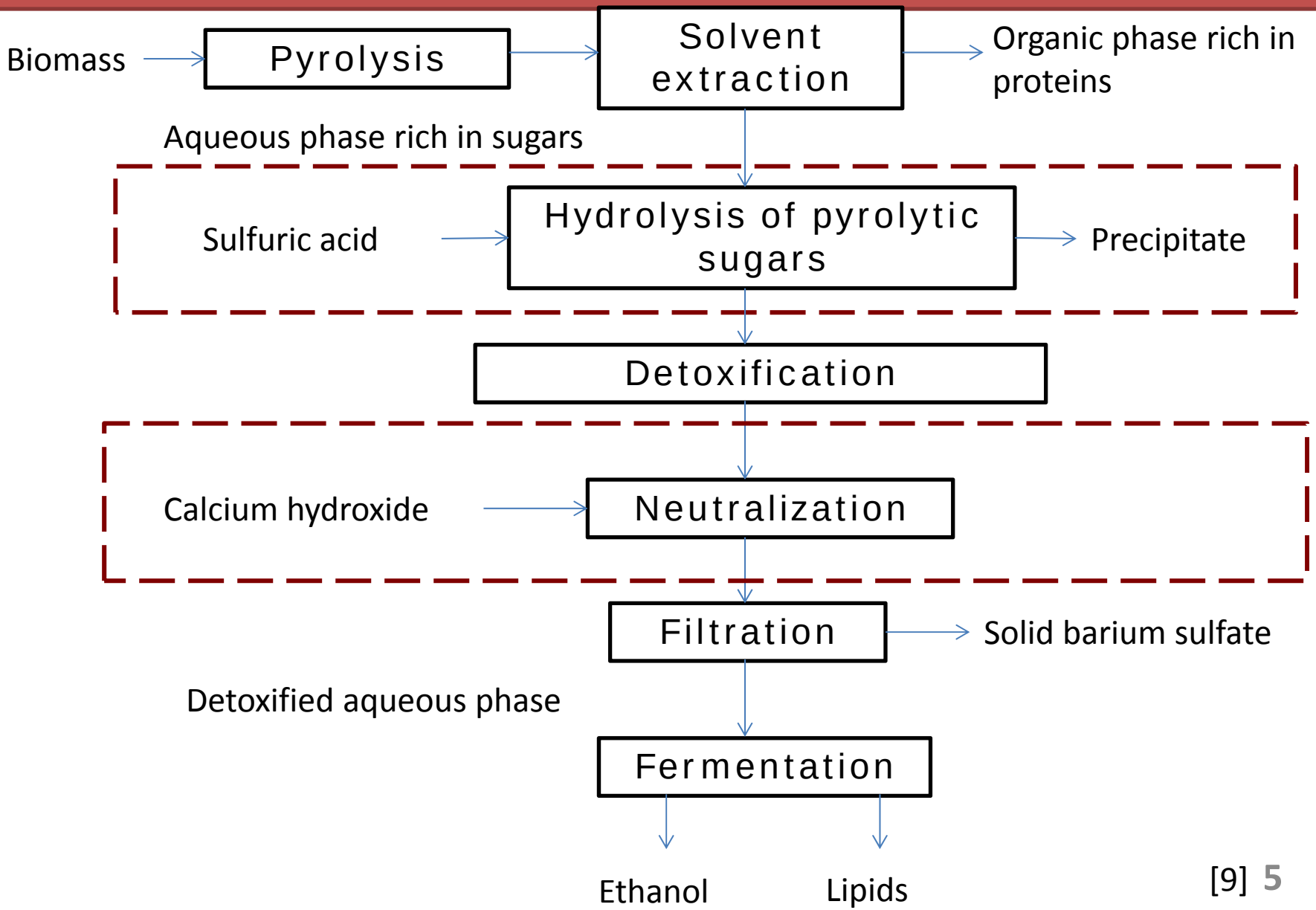


Levoglucosan



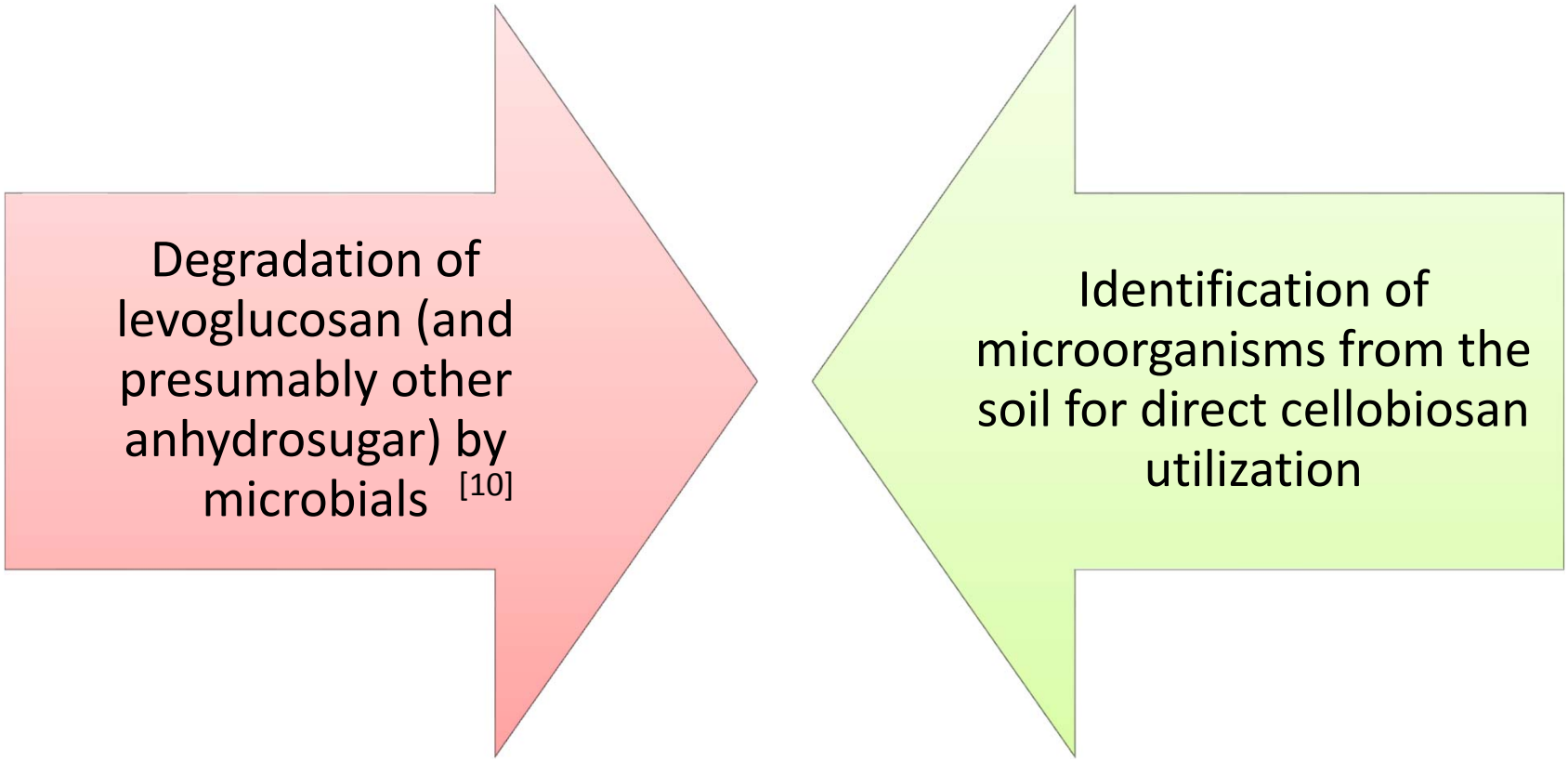
Cellobiosan

Anhydrosugar production pathway

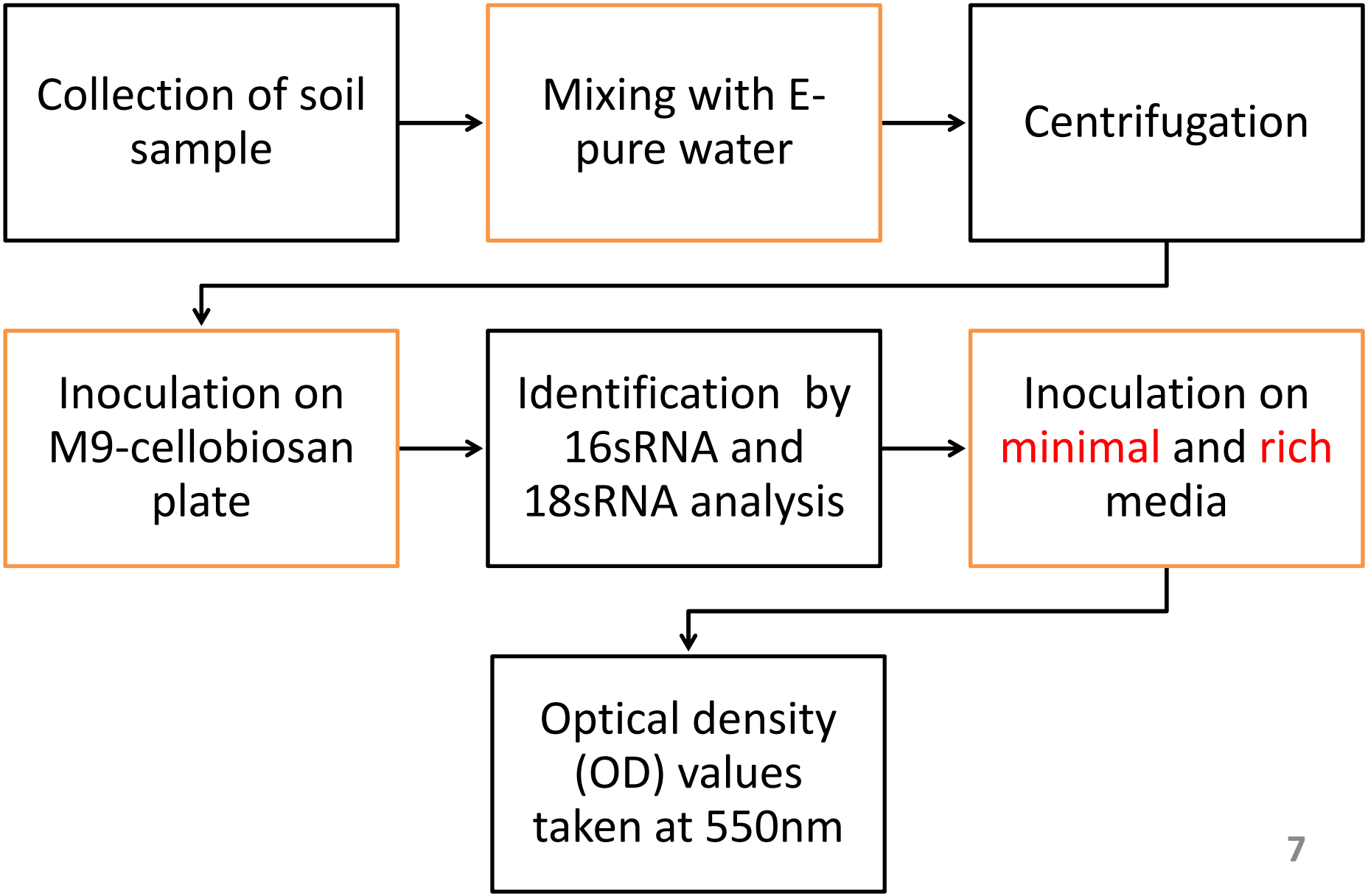


[9]

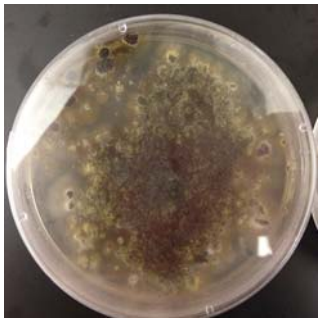
Purpose


Degradation of levoglucosan (and presumably other anhydrosugar) by microbials [10]
Identification of microorganisms from the soil for direct cellobiosan utilization

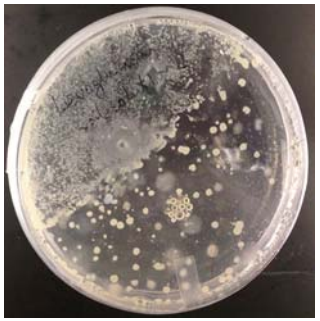
Methodology



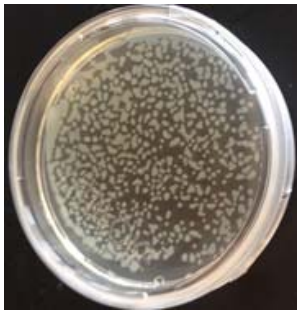
Results



Soil sample

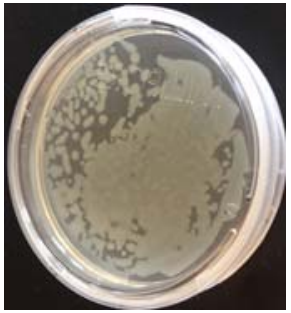


Soil extract

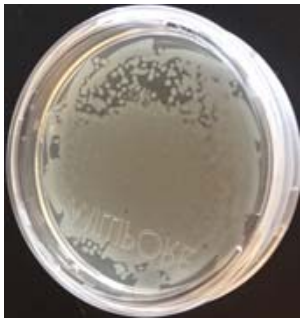


Shingobactetrium 1

Sphingobacterium 2

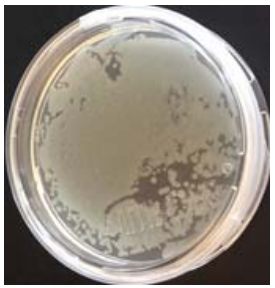


Enterobacter 1

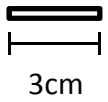


Microbacterium 1

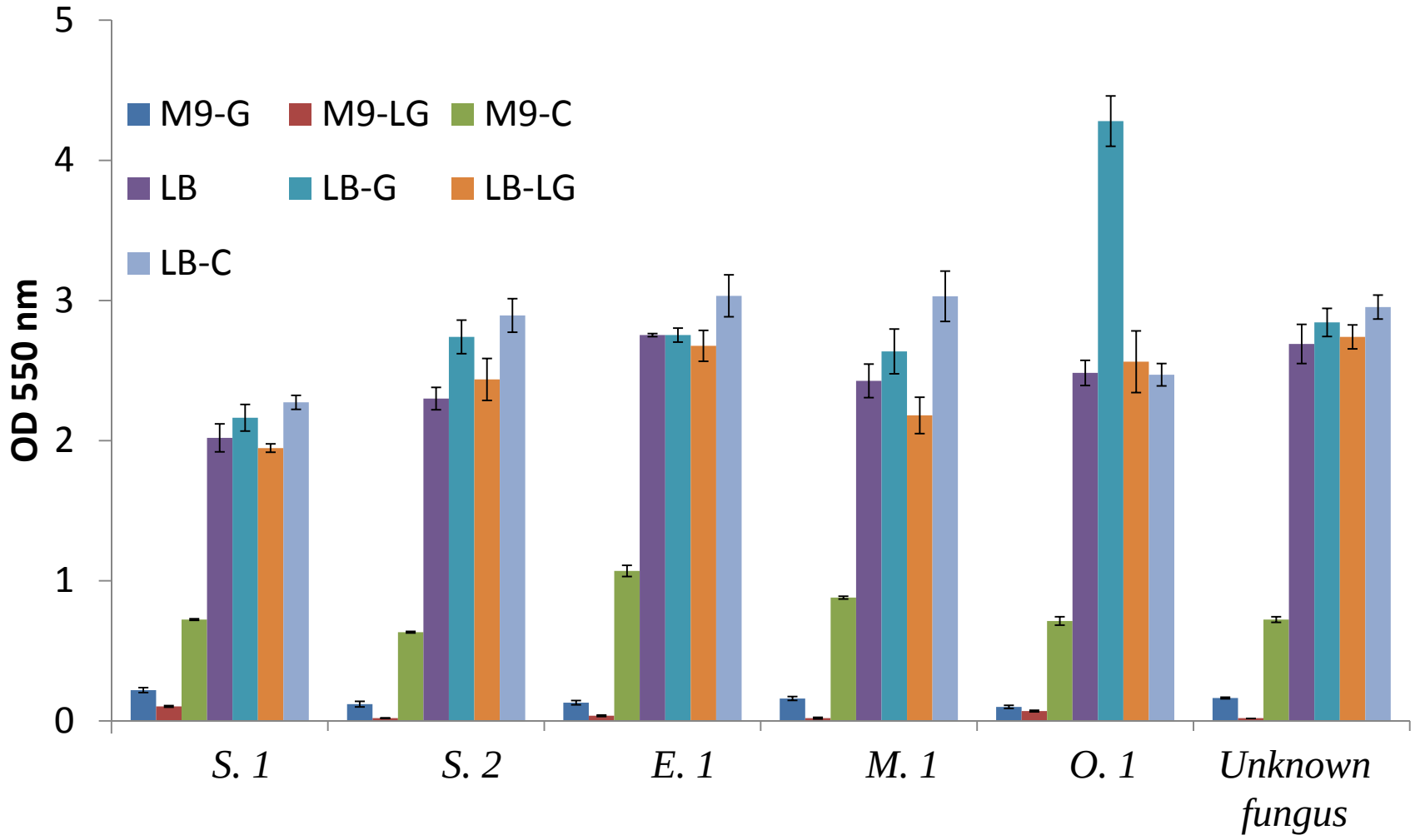
Ochrobactrum 2



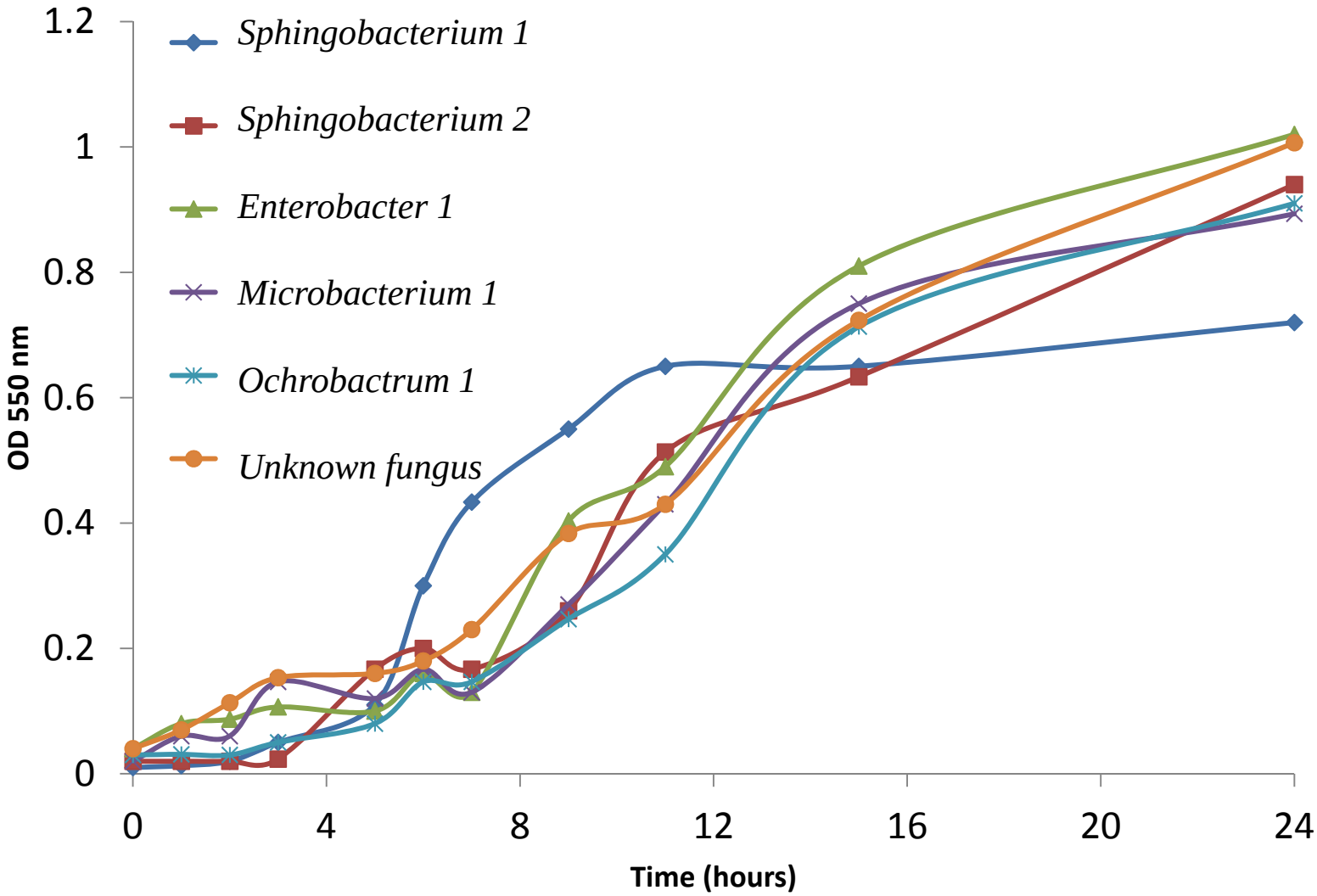
Unknown fungus



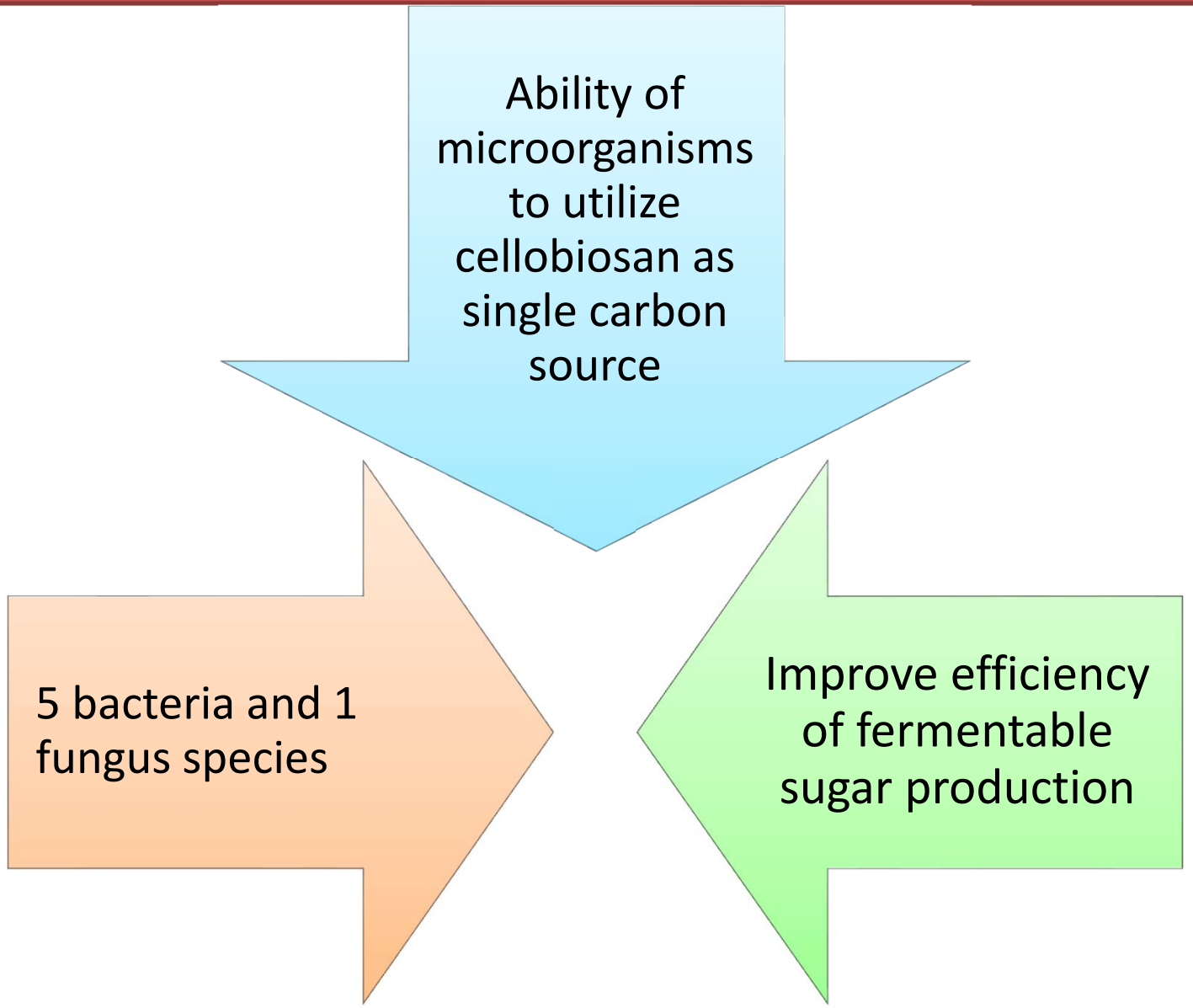
Cell growth on different media after 24 hours



Cell growth on M9-cellobiosan after 24 hours



Conclusion


Ability of microorganisms to utilize cellobiosan as single carbon source
5 bacteria and 1 fungus species
Improve efficiency of fermentable sugar production

Acknowledgement

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Postdoctoral Research Associate, Bioeconomy Institute

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Questions?

References

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